GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: July 16, 2003, 13:53:26 ; Search time 22 Seconds
(without alignments)
41.476 Million cell updates/sec

Title: US-09-914-213-2
Perfect score: 116
Sequence: 1 GLEISEEINEEDLKECFFDDME 22

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 112892 seqs, 41476328 residues

Total number of hits satisfying chosen parameters: 112892

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : SwissProt_40:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	116	100.0	1480	1	CFTR_HUMAN	P13569 homo sapien
2	106	91.4	1481	1	CFTR_BOVIN	P35071 bos taurus
3	106	91.4	1481	1	CFTR_SHEEP	Q00555 ovis aries
4	103	88.8	1450	1	CFTR_RABIT	Q00554 oryctolagus
5	97	83.6	524	1	CFTR_RAT	P34158 rattus norv
6	94	81.0	1485	1	CFTR_XENLA	P26363 xenopus lae
7	87	75.0	1476	1	CFTR_MOUSE	P26361 mus musculu
8	87	75.0	1492	1	CFTR_SQUAC	P26362 squalus aca
9	57	49.1	378	1	LUXE_VIBHA	P14286 vibrio harv
10	54	46.6	626	1	RN17_MOUSE	Q99mv7 mus musculu
11	50	43.1	631	1	ETFD_YEAST	Q08822 s probable
12	49	42.2	257	1	ETXA_STAAW	P13163 staphylococ
13	49	42.2	257	1	ETXE_STAAU	P12993 staphylococ
14	49	42.2	457	1	HEMN_HELPY	O25376 helicobacte
15	48.5	41.8	565	1	YHXB_BACSU	P18159 bacillus su
16	48	41.4	457	1	HEMN_HELPJ	Q9zlh0 helicobacte
17	47	40.5	603	1	LEPA_SYNY3	P74751 synechocyst
18	47	40.5	1321	1	AB11_HUMAN	O95342 homo sapien
19	46	39.7	599	1	PRIM_BACHD	Q9kd44 bacillus ha
20	46	39.7	706	1	NUCL_MOUSE	P09405 mus musculu
21	46	39.7	1328	1	FINC_PLEWA	Q91289 pleurodeles
22	46	39.7	1882	1	POL2_TRSVR	P25247 tomato ring
23	45	38.8	201	1	RACG_DICDI	Q9gps0 dictyosteli
24	45	38.8	260	1	RS2_BORBU	O51149 borrelia bu
25	45	38.8	442	1	VAN1_CANAL	Q00314 candida alb
26	45	38.8	593	1	NTPA_ENTHR	Q08636 enterococcu
27	45	38.8	887	1	MCM2_DROME	P49735 drosophila
28	44.5	38.4	386	1	NESG_HUMAN	Q9ul16 homo sapien
29	44	37.9	240	1	Y124_THEMA	Q9wxx8 thermotoga
30	44	37.9	373	1	LUXE_PHOLE	P29334 photobacter
31	44	37.9	3951	1	VGF1_IBVB	P27920 avian infec
32	43.5	37.5	273	1	SC65_YEAST	P29478 saccharomyc
33	43.5	37.5	614	1	IF2_UREPA	Q9pqh1 ureaplasma
34	43	37.1	173	1	LEPA_MYCHY	Q9zhz8 mycoplasma
35	43	37.1	210	1	VP28_CAEEL	Q9na26 caenorhabdi
36	43	37.1	264	1	KKA3_ENTFA	P00554 enterococcu
37	43	37.1	358	1	ALF_YEAST	P14540 saccharomyc
38	43	37.1	437	1	DNAA_MYCGE	P35888 mycoplasma
39	43	37.1	459	1	TRME_BACSU	P25811 bacillus su
40	43	37.1	554	1	Y478_RICPR	Q9zd66 rickettsia
41	43	37.1	713	1	NUCL_MESAU	P08199 mesocricetu
42	43	37.1	756	1	MLH1_HUMAN	P40692 homo sapien
43	43	37.1	760	1	MLH1_MOUSE	Q9jk91 mus musculu
44	43	37.1	1101	1	P11G_HUMAN	P48736 homo sapien
45	42.5	36.6	842	1	PHSH_VICFA	P53537 vicia faba

ALIGNMENTS

RESULT 1
CFTR_HUMAN
ID CFTR_HUMAN STANDARD; PRT; 1480 AA.
AC P13569;
DT 01-JAN-1990 (Rel. 13, Created)
DT 01-OCT-1996 (Rel. 34, Last sequence update)
DT 15-JUN-2002 (Rel. 41, Last annotation update)
DE Cystic fibrosis transmembrane conductance regulator (CFTR) (cAMP-
DE dependent chloride channel).
GN CFTR OR ABCC7.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89368940; PubMed=2475911;
RA Riordan J.R., Rommens J.M., Kerem B., Alon N., Rozmahel R.,
RA Grzelczak Z., Zielenski J., Lok S., Plavsic N., Chou J.-L.,
RA Drumm M.L., Iannuzzi M.C., Collins F.S., Tsui L.-C.;
RT "Identification of the cystic fibrosis gene: cloning and
RT characterization of complementary DNA.";
RL Science 245:1066-1073(1989).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=91257831; PubMed=1710598;
RA Zielenski J., Rozmahel R., Bozon D., Kerem B., Grzelczak Z.,
RA Riordan J.R., Rommens J., Tsui L.-C.;
RT "Genomic DNA sequence of the cystic fibrosis transmembrane
RT conductance regulator (CFTR) gene.";
RL Genomics 10:214-228(1991).
RN [3]
RP 3D-STRUCTURE MODELING OF 425-638.
RX MEDLINE=98176720; PubMed=9517543;
RA Hoedemaeker F.J., Davidson A.R., Rose D.R.;
RT "A model for the nucleotide-binding domains of ABC transporters based
RT on the large domain of aspartate aminotransferase.";
RL Proteins 30:275-286(1998).
RN [4]
RP PHOSPHORYLATION SITES.
RX MEDLINE=92316961; PubMed=1377674;
RA Picciotto M.R., Cohn J.A., Bertuzzi G., Greenguard P., Nairn A.C.;
RT "Phosphorylation of the cystic fibrosis transmembrane conductance
RT regulator.";
RL J. Biol. Chem. 267:12742-12752(1992).
RN [5]
RP PHOSPHORYLATION SITES.
RX MEDLINE=98046756; PubMed=9385646;
RA Neville D.C.A., Rozanas C.R., Rice E.M., Gruis D.B., Verkman A.S.,
RA Townsend R.R.;
RT "Evidence for phosphorylation of serine 753 in CFTR using a novel
RT metal-ion affinity resin and matrix-assisted laser desorption mass
RT spectrometry.";
RL Protein Sci. 6:2436-2445(1997).
RN [6]
RP REVIEW.

RX MEDLINE=92339790; PubMed=1378801;
RA McIntosh I., Cutting G.R.;
RT "Cystic fibrosis transmembrane conductance regulator and the etiology
RT and pathogenesis of cystic fibrosis.";
RL FASEB J. 6:2775-2782(1992).
RN [7]
RP REVIEW ON VARIANTS.
RX MEDLINE=93250808; PubMed=1284534;
RA Tsui L.-C.;
RT "Mutations and sequence variations detected in the cystic fibrosis
RT transmembrane conductance regulator (CFTR) gene: a report from the
RT Cystic Fibrosis Genetic Analysis Consortium.";
RL Hum. Mutat. 1:197-203(1992).
RN [8]
RP VARIANTS CF.
RX MEDLINE=90326187; PubMed=1695717;
RA Cutting G.R., Kasch L.M., Rosenstein B.J., Zielenski J., Tsui L.-C.,
RA Antonarakis S.E., Kazazian H.H. Jr.;
RT "A cluster of cystic fibrosis mutations in the first
RT nucleotide-binding fold of the cystic fibrosis conductance regulator
RT protein.";
RL Nature 346:366-369(1990).
RN [9]
RP VARIANTS CF.
RX MEDLINE=91046014; PubMed=2236053;
RA Kerem B.-S., Zielenski J., Markiewicz D., Bozon D., Gazit E.,
RA Yahav J., Kennedy D., Riordan J.R., Collins F.S., Rommens J.M.,
RA Tsui L.-C.;
RT "Identification of mutations in regions corresponding to the two
RT putative nucleotide (ATP)-binding folds of the cystic fibrosis
RT gene.";
RL Proc. Natl. Acad. Sci. U.S.A. 87:8447-8451(1990).
RN [10]
RP VARIANTS CF.
RX MEDLINE=91257839; PubMed=1710600;
RA White M.B., Krueger L.J., Holsclaw D.S. Jr., Gerrard B.C.,
RA Stewart C., Quittell L., Dolganov G., Baranov V., Ivaschenko T.,
RA Kapronov N.I., Sebastio G., Castiglione O., Dean M.;
RT "Detection of three rare frameshift mutations in the cystic fibrosis
RT gene in an African-American (CF444delA), an Italian (CF2522insC), and
RT a Soviet (CF3821delT).";
RL Genomics 10:266-269(1991).
RN [11]
RP VARIANTS CF PHE-520 AND HIS-1291.
RX MEDLINE=93244747; PubMed=1284466;
RA Jones C.T., McIntosh I., Keston M., Ferguson A., Brock D.J.H.;
RT "Three novel mutations in the cystic fibrosis gene detected by
RT chemical cleavage: analysis of variant splicing and a nonsense
RT mutation.";
RL Hum. Mol. Genet. 1:11-17(1992).
RN [12]
RP VARIANT CF MET-1283.
RX MEDLINE=93244771; PubMed=1284468;
RA Cheadle J.P., Meredith A.L., Al-Jader L.N.;
RT "A new missense mutation (R1283M) in exon 20 of the cystic fibrosis
RT transmembrane conductance regulator gene.";
RL Hum. Mol. Genet. 1:123-125(1992).
RN [13]
RP VARIANT CF PRO-1255.
RX MEDLINE=93250788; PubMed=1284530;
RA Lissens W., Bonduelle M., Malfroot A., Dab I., Liebaers I.;
RT "A serine to proline substitution (S1255P) in the second nucleotide
RT binding fold of the cystic fibrosis gene.";
RL Hum. Mol. Genet. 1:441-442(1992).
RN [14]
RP VARIANTS CF LYS-92 AND CYS-117.
RX MEDLINE=93250787; PubMed=1284529;
RA Shackleton S., Beards F., Harris A.;
RT "Detection of novel and rare mutations in exon 4 of the cystic
RT fibrosis gene by SSCP.";
RL Hum. Mol. Genet. 1:439-440(1992).
RN [15]
RP VARIANT CF LYS-1101.

RX MEDLINE=93190992; PubMed=7680525;
RA Zielenski J., Fugiwara T.M., Markiewicz D., Paradis A.J.,
RA Anacleto A.I., Richards B., Schwartz R.H., Klinger K.W., Tsui L.C.,
RA Morgan K.;
RT "Identification of the M1101K mutation in the cystic fibrosis
RT transmembrane conductance regulator (CFTR) gene and complete
RT detection of cystic fibrosis mutations in the Hutterite population.";
RL Am. J. Hum. Genet. 52:609-615(1993).
RN [16]
RP VARIANTS CF V-1052; R-1061; L-1066; Q-1070; R-1085 AND R-1101.
RX MEDLINE=93252404; PubMed=7683628;
RA Mercier B., Lissens W., Novelli G., Kalaydjieva L., De Arce M.,
RA Kapranov N., Klain N.C., Lenoir G., Chauveau P., Lenaerts C.,
RA Rault G., Cashman S., Sangiuolo F., Audrezet M.P., Dallapiccola B.,
RA Guillermit H., Bonduelle M., Liebaers I., Quere I., Verlingue C.,
RA Ferec C.;
RT "Identification of eight novel mutations in a collaborative analysis
RT of a part of the second transmembrane domain of the CFTR gene.";
RL Genomics 16:296-297(1993).
RN [17]
RP VARIANT CF LYS-92.
RX MEDLINE=93258355; PubMed=7683954;
RA Nunes V., Chillon M., Doerk T., Tuemmler B., Casals T., Estivill X.;
RT "A new missense mutation (E92K) in the first transmembrane domain of
RT the CFTR gene causes a benign cystic fibrosis phenotype.";
RL Hum. Mol. Genet. 2:79-80(1993).
RN [18]
RP VARIANT CF SER-205.
RX MEDLINE=94093573; PubMed=7505694;
RA Chillon M., Casals T., Nunes V., Gimenez J., Ruiz E.P., Estivill X.;
RT "Identification of a new missense mutation (P205S) in the first
RT transmembrane domain of the CFTR gene associated with a mild cystic
RT fibrosis phenotype.";
RL Hum. Mol. Genet. 2:1741-1742(1993).
RN [19]
RP VARIANTS CF.
RX MEDLINE=94080255; PubMed=7504969;
RA Gasparini P., Marigo C., Bisceglia G., Nicolis E., Zelante L.,
RA Bombieri C., Borgo G., Pignatti P.F., Cabrini G.;
RT "Screening of 62 mutations in a cohort of cystic fibrosis patients
RT from north eastern Italy: their incidence and clinical features of
RT defined genotypes.";
RL Hum. Mutat. 2:389-394(1993).
RN [20]
RP VARIANTS CYS-31; ILE-1220; CF LEU-912; TYR-949; PRO-1065; PRO-1071.
RX MEDLINE=94375072; PubMed=7522211;
RA Ghaneb N., Costes B., Girodon E., Martin J., Fanen P., Goossens M.;
RT "Identification of eight mutations and three sequence variations in
RT the cystic fibrosis transmembrane conductance regulator (CFTR)
RT gene.";
RL Genomics 21:434-436(1994).
RN [21]
RP VARIANT CF PRO-346.
RX MEDLINE=94222417; PubMed=7513296;
RA Boteva K., Papageorgiou E., Georgiou C., Angastiniotis M.,
RA Middleton L.T., Constantinou-Deltas C.D.;
RT "Novel cystic fibrosis mutation associated with mild disease in
RT Cypriot patients.";
RL Hum. Genet. 93:529-532(1994).
RN [22]
RP VARIANTS CF TYR-199; SER-619; ARG-1005 AND ARG-1291.
RX MEDLINE=95048290; PubMed=7525450;
RA Doerk T., Mekus F., Schmidt K., Bosshammer J., Fislage R., Heuer T.,
RA Dziadek V., Neumann T., Kaelin N., Wulbrand U., Wulf B.,
RA von der Hardt H., Maass G., Tuemmler B.;
RT "Detection of more than 50 different CFTR mutations in a large group
RT of German cystic fibrosis patients.";
RL Hum. Genet. 94:533-542(1994).
RN [23]
RP VARIANT CF GLU-1249.
RX MEDLINE=94333927; PubMed=7520022;
RA Greil I., Wagner K., Rosenkranz W.;
RT "A new missense mutation G1249E in exon 20 of the cystic fibrosis

```
  Query Match             100.0%;  Score 116;  DB 1;  Length 1480;
  Best Local Similarity   100.0%;  Pred. No. 7e-08;
  Matches   22;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 GLEISEEINEEDLKECFFDDME 22
              ||||||||||||||||||||||
Db        817 GLEISEEINEEDLKECFFDDME 838


RESULT 2
CFTR_BOVIN
ID   CFTR_BOVIN     STANDARD;      PRT;  1481 AA.
AC   P35071;
DT   01-FEB-1994 (Rel. 28, Created)
DT   01-FEB-1994 (Rel. 28, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Cystic fibrosis transmembrane conductance regulator (CFTR) (cAMP-
DE   dependent chloride channel).
GN   CFTR OR ABCC7.
OS   Bos taurus (Bovine).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
OC   Bovidae; Bovinae; Bos.
OX   NCBI_TaxID=9913;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=92042228; PubMed=1719001;
RA   Diamond G., Scanlin T.F., Zasloff M.A., Bevins C.L.;
RT   "A cross-species analysis of the cystic fibrosis transmembrane
RT   conductance regulator. Potential functional domains and regulatory
RT   sites.";
RL   J. Biol. Chem. 266:22761-22769(1991).
CC   -!- FUNCTION: INVOLVED IN THE TRANSPORT OF CHLORIDE IONS.
CC   -!- SUBCELLULAR LOCATION: Integral membrane protein.
CC   -!- SIMILARITY: BELONGS TO THE ABC TRANSPORTER FAMILY. MRP SUBFAMILY.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; M76128; AAA30772.1; -.
DR   PIR; A39323; A39323.
DR   HSSP; P13569; 1NBD.
DR   InterPro; IPR003593; AAA_ATPase.
DR   InterPro; IPR003439; ABC_transportr.
DR   InterPro; IPR001140; ABCtranprtrTM.
DR   InterPro; IPR005291; cAMP_cl_channel.
DR   Pfam; PF00005; ABC_tran; 2.
DR   Pfam; PF00664; ABC_membrane; 2.
DR   ProDom; PD000006; ABC_transportr; 2.
DR   SMART; SM00382; AAA; 1.
DR   TIGRFAMs; TIGR00953; 3a01202; 1.
DR   TIGRFAMs; TIGR01271; CFTR_protein; 1.
DR   PROSITE; PS00211; ABC_TRANSPORTER; 1.
KW   ATP-binding; Transmembrane; Transport; Glycoprotein; Repeat;
KW   Ionic channel; Phosphorylation.
FT   TRANSMEM     81    103       1 (POTENTIAL).
FT   TRANSMEM    118    138       2 (POTENTIAL).
FT   TRANSMEM    195    215       3 (POTENTIAL).
FT   TRANSMEM    221    241       4 (POTENTIAL).
FT   TRANSMEM    308    328       5 (POTENTIAL).
FT   TRANSMEM    331    350       6 (POTENTIAL).
FT   NP_BIND     457    464       ATP (BY SIMILARITY).
FT   TRANSMEM    860    880       7 (POTENTIAL).
FT   TRANSMEM    912    932       8 (POTENTIAL).
FT   TRANSMEM    991   1011       9 (POTENTIAL).
FT   TRANSMEM   1014   1034       10 (POTENTIAL).
FT   TRANSMEM   1103   1123       11 (POTENTIAL).
FT   TRANSMEM   1129   1149       12 (POTENTIAL).
FT   NP_BIND    1245   1252       ATP (BY SIMILARITY).
FT   MOD_RES     659    659       PHOSPHORYLATION (BY PKA) (POTENTIAL).
FT   MOD_RES     685    685       PHOSPHORYLATION (BY PKC) (POTENTIAL).
FT   MOD_RES     699    699       PHOSPHORYLATION (BY PKA) (POTENTIAL).
FT   MOD_RES     736    736       PHOSPHORYLATION (BY PKA) (POTENTIAL).
FT   MOD_RES     767    767       PHOSPHORYLATION (BY PKA) (POTENTIAL).
FT   MOD_RES     790    790       PHOSPHORYLATION (BY PKC) (POTENTIAL).
FT   MOD_RES     795    795       PHOSPHORYLATION (BY PKA) (POTENTIAL).
FT   MOD_RES     813    813       PHOSPHORYLATION (BY PKA) (POTENTIAL).
SQ   SEQUENCE   1481 AA;  167758 MW;  83A706855C496AD7 CRC64;

  Query Match             91.4%;  Score 106;  DB 1;  Length 1481;
  Best Local Similarity   86.4%;  Pred. No. 1.5e-06;
  Matches   19;  Conservative    3;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 GLEISEEINEEDLKECFFDDME 22
              ||||||||||||::|:||||:|
Db        817 GLEISEEINEEDLRDCFFDDVE 838


RESULT 3
CFTR_SHEEP
ID   CFTR_SHEEP     STANDARD;      PRT;  1481 AA.
AC   Q00555; Q28544;
DT   01-FEB-1994 (Rel. 28, Created)
DT   01-NOV-1997 (Rel. 35, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Cystic fibrosis transmembrane conductance regulator (CFTR) (cAMP-
DE   dependent chloride channel).
GN   CFTR OR ABCC7.
OS   Ovis aries (Sheep).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
OC   Bovidae; Caprinae; Ovis.
OX   NCBI_TaxID=9940;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=95199336; PubMed=7534416;
RA   Tebbutt S.J., Wardle C.J., Hill D.F., Harris A.;
RT   "Molecular analysis of the ovine cystic fibrosis transmembrane
RT   conductance regulator gene.";
RL   Proc. Natl. Acad. Sci. U.S.A. 92:2293-2297(1995).
RN   [2]
RP   SEQUENCE OF 600-776 FROM N.A.
RX   MEDLINE=92042228; PubMed=1719001;
RA   Diamond G., Scanlin T.F., Zasloff M.A., Bevins C.L.;
RT   "A cross-species analysis of the cystic fibrosis transmembrane
RT   conductance regulator. Potential functional domains and regulatory
RT   sites.";
RL   J. Biol. Chem. 266:22761-22769(1991).
RN   [3]
RP   VARIANT GLN-297.
RX   MEDLINE=98357018; PubMed=9691989;
RA   Tebbutt S.J., Lakeman M.B., Wilson-Wheeler J.C., Hill D.F.;
RT   "Genetic variation within the ovine cystic fibrosis transmembrane
RT   conductance regulator gene.";
RL   Mutat. Res. 382:93-98(1998).
CC   -!- FUNCTION: INVOLVED IN THE TRANSPORT OF CHLORIDE IONS.
CC   -!- SUBCELLULAR LOCATION: Integral membrane protein.
CC   -!- SIMILARITY: BELONGS TO THE ABC TRANSPORTER FAMILY. MRP SUBFAMILY.
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CC   ---------------------------------------------------------------------
DR   EMBL; U20418; AAA68600.1; -.
DR   EMBL; M96682; AAA31514.1; -.
DR   PIR; B39323; B39323.
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